CONVERGENCE

News, Links, and Insights
by JEFFREY BLAND, PHD

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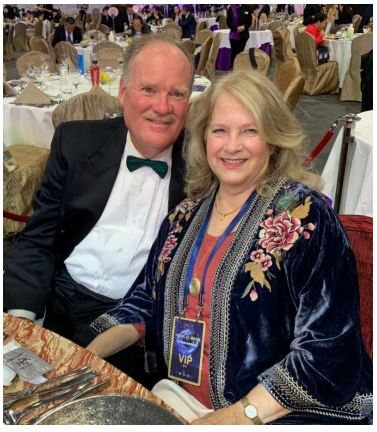
Thank you for subscribing to Dr. Jeffrey Bland's newsletter. Enjoy and share this information, which is for educational purposes only and is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always consult with a qualified healthcare professional when you are in need of advice regarding a medical condition.

In this issue: Happy New Year Message; Save the Date: The Seventh Annual Thought Leaders Consortium; Microbiome Links to Geographic Location; Video: A Tribute to Dr. Vera Stejskal; The Many Functions of AMPK; The Relationship Between AMPK and Vitamin D



Happy New Year!

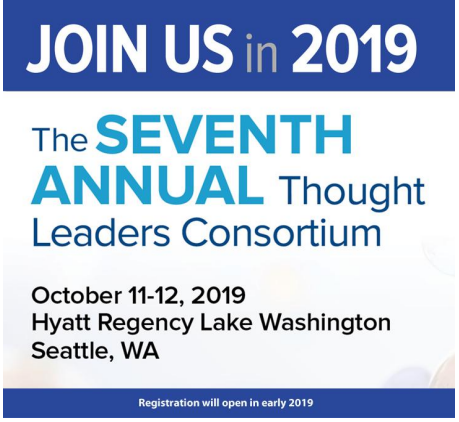
Warm wishes to everyone for a healthy and happy 2019 from Jeff and Susan Bland.

This past year has been filled with family and gratitude. It is wonderful to report that Susan has recovered well from a serious leg fracture that caused us to reflect, slow down, and reconsider priorities throughout 2018. Thankfully, the months ahead will bring travel and adventures that we look forward to with great anticipation.

Thank you for your ongoing interest and support of our work and our advocacy.

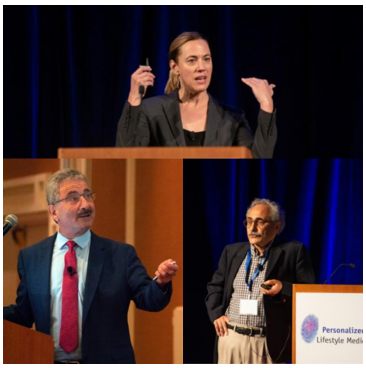
Dr. Jeff Bland to Host PLMI's Thought Leaders Consortium in October 2019 - Save the Date!

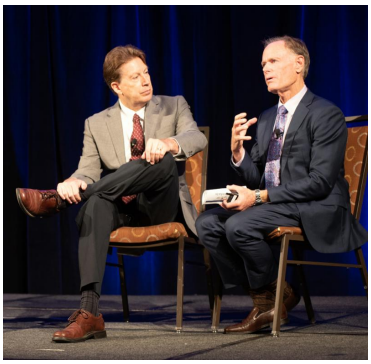
Personalizing Nutrition Therapy in the Age of Lifestyle Medicine:
Compelling Evidence, Breakthrough Science, and a New Era of Clinical Care



Join us in Seattle this fall! Registration opens soon and seats will fill quickly.

Significant advancements have been made in the development and application of personalized medical nutrition therapy as a result of recent groundbreaking discoveries in the fields of cellular signaling, autophagy, immunology, nutritional biochemistry, systems biology, genomics, epigenomics, microbiomics, biometrics and informatics. Innovative researchers are pioneering new approaches to clinical intervention trials and we are gaining an expanded understanding of the mechanistic role that nutrition plays in the management of chronic disease and the modulation of cellular communication. PLMI's Seventh Annual Thought Leaders Consortium will be THE conference to explore the intersection of evidenced-based science, new assessment tools, and personalized therapeutic nutrition approaches for the management of chronic immunometabolic disorders. Our expert faculty will offer their insights and knowledge on a multitude of today's most challenging immunometabolic conditions, including hypertension, metabolic syndrome, non-alcoholic fatty liver disease, polycystic ovary syndrome, and retinopathy.





Visit www.plminstitute.org to learn more about viewing videos from the 2018 Thought Leaders Consortium.

Location Really is Everything for the Microbiome

Humans have multiple microbiomes, ranging from skin, nose, and mouth to stomach, urogenital, and intestinal. Everyone's microbiomes are unique, and are always changing with season, diet, travel, activity, and exposures. Microbiome research is tasked not only with characterizing all these human microbiomes, but also how they change in health and disease. Because obesity has become globally prevalent, a recent study in China examined how microbiomes in people living in different locations changed over time as some of them invariably developed metabolic dysfunction. The research team discovered, however, that people living in different areas and experiencing metabolic changes appeared to do so in a geographically-specific manner: the particular microbiome changes that characterized obesity or metabolic syndrome in one location did not translate the same way in other geographical areas,

even within the same province. In a way, this is not inconsistent with what has previously been noticed about microbiomes: they are intensely personal, even as they change. While there is undoubted value in comparing microbiomes among broad populations, it is increasingly clear that analyzing each person's microbiome repeatedly over time may yield the most useful prognostic information. Microbiome testing can potentially be used in this manner to gauge individuals' disease risk and to guide them, one at a time, into eating patterns and styles of living that are healthful for them personally. This is especially so if individuals can combine microbiome results with other personalized testing and track how changes in their microbiome correlate with how they feel and function over time.

New Video Blog: A Tribute to Dr. Vera Stejskal

The scientific community lost an important contributor in 2017 when Vera Stejskal, PhD, passed away following a brief illness. Dr. Stejskal was an Associate Professor of Immunology at the University of Stockholm and inventor of the MELISA test, a blood test that detects hypersensitivity to metals, chemicals, environmental toxins, and molds. To Dr. Jeff Bland, Dr. Stejskal was a good friend and a respected colleague. He pays a tribute to her work and legacy in this video blog.

Video Link: https://www.youtube.com/watch?v=ayA_46Hdcvs

Video is one of Dr. Bland's favorite communication tools. Subscribe to his YouTube channel to never miss an update, and also find many additional videos on the Personalized Lifestyle Medicine Institute Vimeo page.

The Chief Executive Housekeeper

Research demonstrating how strongly diet, drugs, and lifestyle affect AMPK (adenosine monophosphate-activated protein kinase) function increases appreciation for this enzyme's broad-ranging control over energy dynamics at both cellular and organismic levels. When you cut calories or exercise, AMPK coordinates glucose and fat catabolism and anabolism to keep you going, and when you fast or lose weight, AMPK directs the sorting of cellular components for recycling or disposal in your metabolic waste bin. It oversees short-term energy usage as well as long-term energy regulation. In basic terms, cellular AMPK monitors levels of the energy molecules AMP and ATP (adenosine triphosphate) and

communicates throughout the body to optimize their balance, exerting major influence over metabolic plasticity and cellular housekeeping functions.

One of AMPK's most important missions is responding to mitochondrial stress and injury caused by redox imbalance, oxygen tension, and mitochondrial toxins such as pesticides and microbicides. Upon these kinds of challenges, AMPK determines when to enact mitophagy to "part out" usable portions of damaged mitochondria and/or order production of new ones. This housekeeping role, a crucial aspect of healthy cell life cycles, also extends to other resources over which AMPK has oversight, such as organelles and cytoplasm. Many of AMPK's activities take place through an impressively broad communications network with many well-known signaling systems linked to biological aging, such as PGC-1a, sirtuins, NAD, mTOR, NFκB, and Nrf2. Through these and other actors, AMPK regulates glucose uptake, insulin sensitivity, fatty acid oxidation, protein and muscle synthesis, exercise capacity, and the inflammatory response.

Given AMPK's central role in balancing anabolic and catabolic functions, modulators of this kinase are popular candidates for conditions as varied as fatty liver disease, neuropathy, cancer, obesity, sarcopenia, and mitochondriopathy. However, the most meaningful ways of influencing AMPK remain the behaviors for which it exists: eating and physical activity. Increased exercise activates AMPK to enhance muscle glucose uptake and fatty acid metabolism, and dietary substances that activate or upregulate AMPK function include acetyl-L-carnitine, berberine, anthocyanins, genistein, tea catechins, mushroom constituents, quercetin, rosemary extract, short-chain fatty acids, and cocoa flavonoids. In this FMU interview, Harvard professor David Sinclair, PhD discusses ways to reprogram genes for improved genetic stability and successful aging. Resveratrol, a plant metabolite produced during stress, is highlighted, as it can act as a dietary mimic of caloric restriction. It works through AMPK, sirtuin, telomerase, and Nrf2 signaling networks to effect DNA repair and optimize cellular energy dynamics.

A High-Level Networking Duo

We've come a long way since thinking that vitamin D was just about bones. Vitamin D receptors appear in tissues throughout the body, including vital organs, connective tissues, muscles, glands, the brain and retina, and the gastrointestinal tract, among others—and their function may be influenced by numerous variants in genes coding for them. This essential nutrient that also acts as a hormone and modulator of gene expression is involved in regulation of both innate and acquired immune function, cognition, growth and development, the insulin/glucose response, and long-term cardiovascular health, and insufficiency can affect them in many ways. How is it that vitamin D is involved in such a broad array of so many high-level activities?

Recent preclinical research suggests that vitamin D works closely with the master metabolic regulator AMPK (adenosine monophosphate-activated protein kinase), feeding it crucial information about environmental and nutritional conditions. Constantly monitoring all inputs that affect long-term energetic balance in cells, the AMPK networking system (which exerts great control over redox balance and cellular aging processes) in turn influences vitamin D-related functions according to its nutritional status and availability. In effect, the AMPK system helps prioritize how vitamin D goes about its work throughout the body, which is consistent with the nutrient "triage" concept frequently discussed by Dr. Bruce Ames. Both vitamin D and AMPK interact with extremely wide metabolic 'social' circles and wear many hats within them, and in the

context of diet and lifestyle, they form part of the foundation of human health.

Where in the World is Dr. Bland?

Every year, Dr. Jeff Bland speaks in front of audiences around the world.

Will this be the year your paths cross?

View Appearances Calendar

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